

# Quantum Computation --- The Ultimate Frontier

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The discovery of an algorithm for factoring which runs in polynomial time on a quantum computer has given rise to a concerted effort to understand the principles, advantages, and limitations of quantum computing. At the same time, many different quantum systems are being explored for their suitability to serve as a physical substrate for the quantum computer of the future. I discuss some of the theoretical foundations of quantum computer science, including algorithms and error correction, and present a few physical systems which have shown promise as a quantum computing platform. Finally, I discuss a spin-off of the quantum computing revolution: quantum technologies.